0	
1	
2	Bank 0
• •	
(Imax-1)/2	
(Imax-1)/2-1	
• •	
i	Bank 1
• •	
Imax-1	

FIG.1(Prior Art)

Pipe(a)-
BankA-
Access

Pipe(a)-
BankA-
Access

BankA-
PreCharge

Pipe(b)-
BankA-
Access

Pipe(b)-
BankA-
Access

BankA-
PreCharge

Pipe(a)-
BankA-
Access

Pre-Charge Overheads here
between Intra-Bank-Accesses

Pre-Charge Overheads here
between Intra-Bank-Accesses

FIG.2(Prior Art)

14

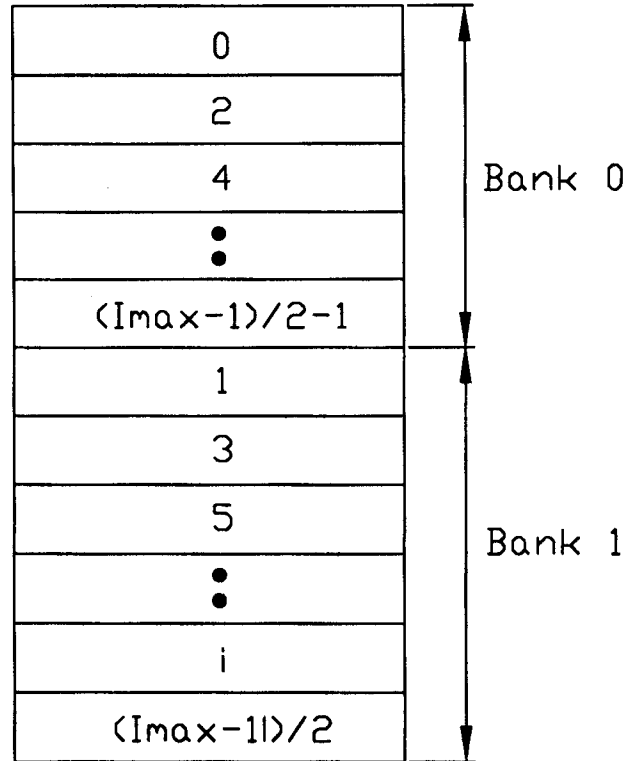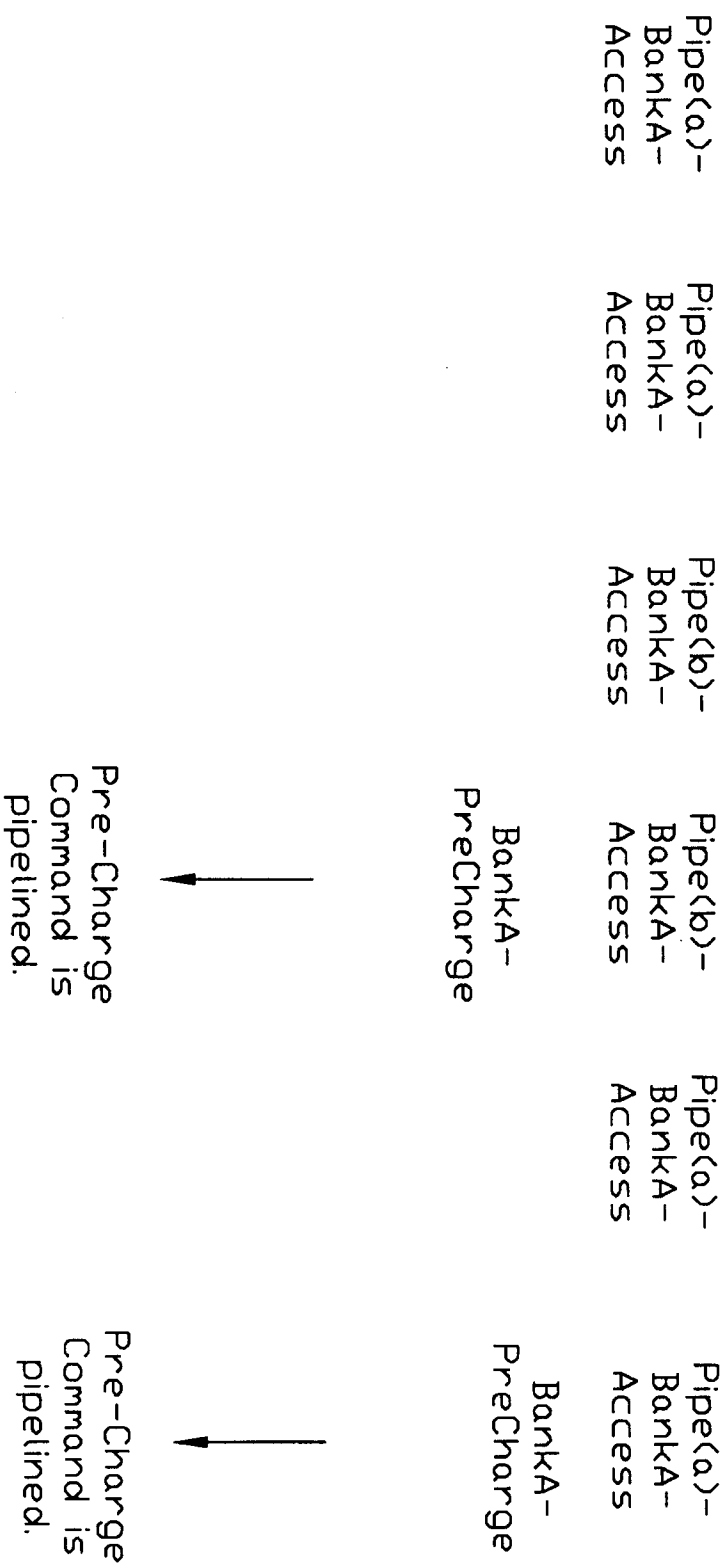|	
0	
2	
4	Bank 0
• •	
(Imax-1)/2-1	
1	
3	
5	Bank 1
• •	
i	
(Imax-1I)/2	

FIG.3

Pipe(a)-
BankA-
Access

Pipe(a)-
BankA-
Access

Pipe(b)-
BankA-
Access

Pipe(b)-
BankA-
Access

BankA-
PreCharge

←

Pre-Charge
Command is
pipelined.

Pipe(a)-
BankA-
Access

BankA-
PreCharge

←

Pre-Charge
Command is
pipelined.

FIG. 4